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95-SWT-129

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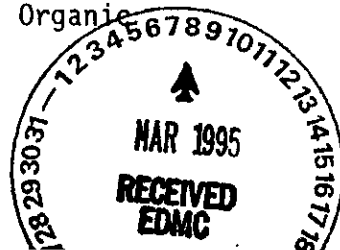
Dear Ms. Butler and Mr. Sherwood:

SOLID WASTE 846 9090 LINER TESTING OF THE LOW-LEVEL BURIAL GROUNDS MIXED WASTE DISPOSAL TRENCH 31 TO BE USED AS AN EQUIVALENCY FOR THE TRENCH 34 LINER

This letter is to inform the State of Washington Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) on how the EPA 9090 chemical compatibility liner tests for Low-Level Burial Grounds Mixed Waste Disposal Trench 31 (Trench 31) liner will be used as an equivalency for the Trench 34 liner.

Trench 34 is a Resource Conservation and Recovery Act (RCRA)/Washington Administrative Code 173-303 Dangerous Waste Regulations (WAC 173-303) compliant landfill. Trench 34 is located in the northwestern portion of the 200 West Area in Burial Ground 218-W-5 of the Hanford Facility. Trench 34 is a rectangular landfill with approximate base dimensions of 76.2 meters (250 feet) by 30.5 meters (100 feet) and a surface grade footprint of 1.3 hectares (3.2 acres). Trench 34 was constructed with a double liner and leachate collection and removal system. Pumps are provided in both the primary and secondary sump areas. Collected leachate will be pumped to a RCRA/WAC 173-303 compliant 37,854 liter (10,000 gallon) storage tank.

Chemical compatibility of a high density polyethylene (HDPE) liner is conducted using an EPA method 9090 test. In a 9090 test, liner materials are exposed to landfill leachate or an extract of the waste, then the physical properties of the material are tested, data correlated and evaluated for changes indicating a trend. The original 9090 test for Trench 31, was performed in late 1990, and limited the variety of chemicals (inorganic and radiation interaction) that could be disposed in Trench 31. This resulted in a limited range of chemical documentation per 9090 test protocol. Organic



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chemicals as a class were not evaluated for inclusion in the potential disposal constituents because it was determined that the waste acceptance criteria for a RCRA landfill would preclude organic materials from being present in the waste following treatment. Today, RCRA does not specify that all organic chemicals be treated before land disposal. WAC 173-303 allows up to 10 percent organic/carbonaceous constituent waste disposal subject to federal limitations. HDPE liners are not inert to certain organic compounds; therefore, a broader 9090 test was required.

A more comprehensive 9090 A test currently is being conducted on the Trench 31 liners for constituent compounds that were not considered for disposal in the original 9090 test. The new 9090 A test will evaluate organic and inorganic constituents to a greater degree and concentration. By building upon the previous 9090 test, a synthetic leachate solution was produced containing as many chemical types that can be reasonably achieved in solution. These chemicals were identified based upon chemical families, regulatory concerns, liner aggressiveness, and soil transport mechanisms. A compound representative of that chemical family was used in the new 9090 A test. If the liner proved inert to the representative chemical at a give concentration, then the liner is resistant to that chemical family at that particular concentration.

To establish a conservative approach for the 9090 A test, Westinghouse Hanford Company (WHC) has prepared a synthesized leachate in stronger concentrations than EPA guidance suggests. To immerse liner material in leachate per Solid Waste (SW) 846 Method 9090 A, Step 7.1 directs, "Obtain a representative sample of the waste fluid." At this time, now waste fluid (leachate) exists; therefore a synthesis using representative chemicals from the different chemical families was used. Step 7.1 continues, "If the waste to be contained in the land disposal unit is in solid form, generate a synthetic leachate (Step 7.9.1)." In step 7.9.1, the EPA suggests the use of the Toxicity Characteristic Leaching Procedure that was finalized in the Federal Register on June 29, 1990, Vol. 55, No. 126, page 26986. The new 9090 A test developed a synthetic leachate by using this approach.

The chemicals selected either represent diverse families of organic chemicals or are specific contaminants known to be present in Hanford waste. They include metal extractants, aliphatics, ketones, aromatics, esters, alcohols, phenols, halogenated solvents, glycols, nitriles, chelating agents, and amines. Also, some were chosen to represent groups of chemicals from the EPA priority pollutants list, if the group was likely to be present in Hanford waste.

The inorganic chemicals selected for the 9090 A test were water soluble, and were chosen in general as representative of a class of elements, or to include a specific ion expected. As with organic chemicals, the inorganic chemicals in the waste stream are also limited by the soil as a physical barrier and will have to pass through the soil layer before coming in contact with the liner.

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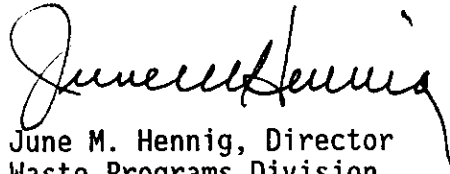
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Radionuclide waste disposal generates penetrating gamma dose. Radiation deposition and subsequent impact on liner materials was evaluated to 50,000 radiation adsorbed dose in the previous 9090 test. The conclusions of this test indicated that the levels of radiation expected in Trench 31 will have little effect on liner performance. Based on these findings, further radiation testing of the liner is not warranted.

Both HDPE liners for Trench 31 and Trench 34 were produced by the same manufacturer. In addition, the waste disposal in both trenches will be similar. The 9090 A test currently being conducted for Trench 31 liner is more stringent than specified in SW 846 Method 9090. A hard dollar cost savings of approximately 60 to 70 thousand dollars will be achieved by not conducting a duplicate 9090 test for Trench 34 liners. The test data from Trench 31 will be more than adequate to demonstrate that Trench 34 liners will be compatible with the waste placed into the trench. Therefore, a 9090 test for Trench 34 liner will not be pursued.

If you have questions on this subject, please contact Ms. A. K. Crowell, of my staff, on (509) 372-2346 or Mr. R. D. Pierce, WHC, on (509) 372-0732.

Sincerely,



June M. Hennig, Director
Waste Programs Division

WPD:AKC

cc: R. Cordtz, Ecology
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Administrative Records, H6-08